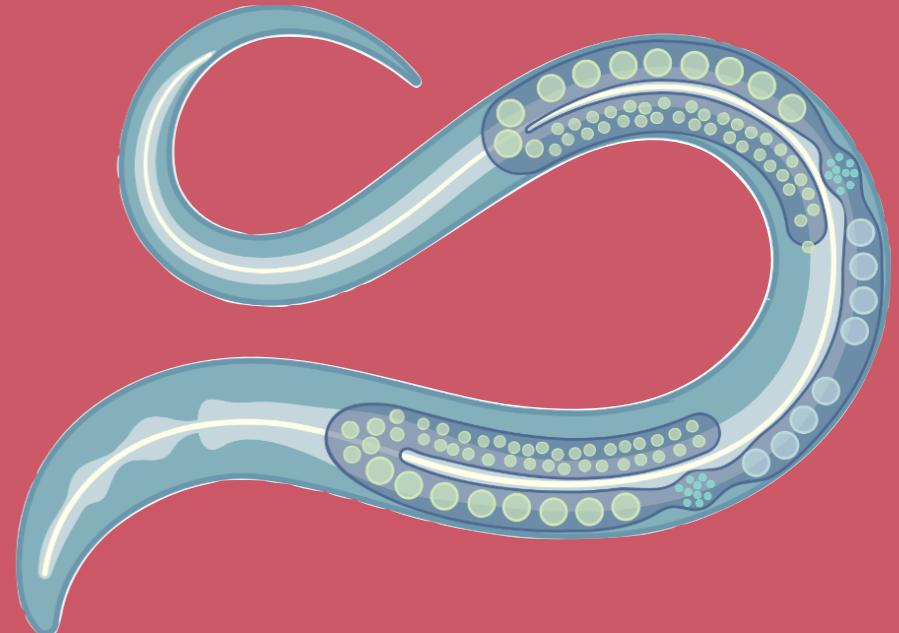
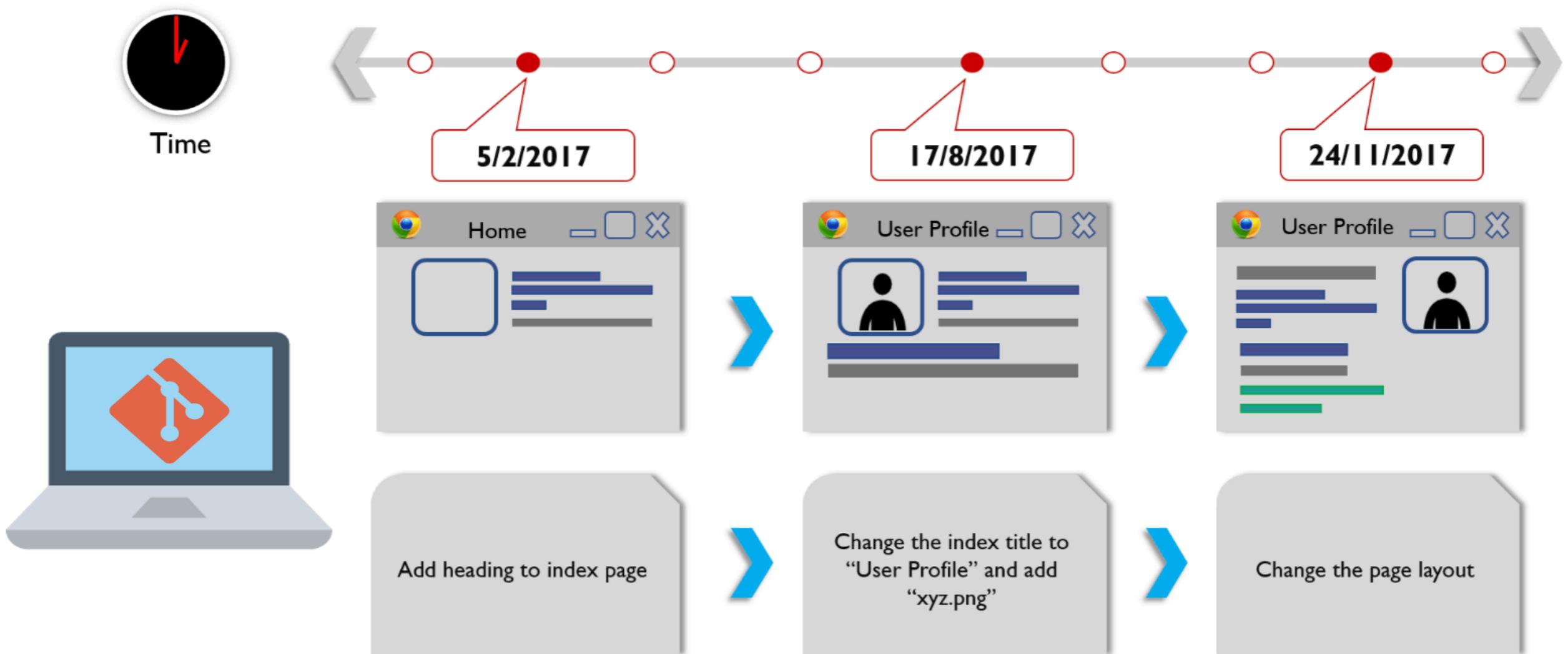


# Code Club

3.26.21

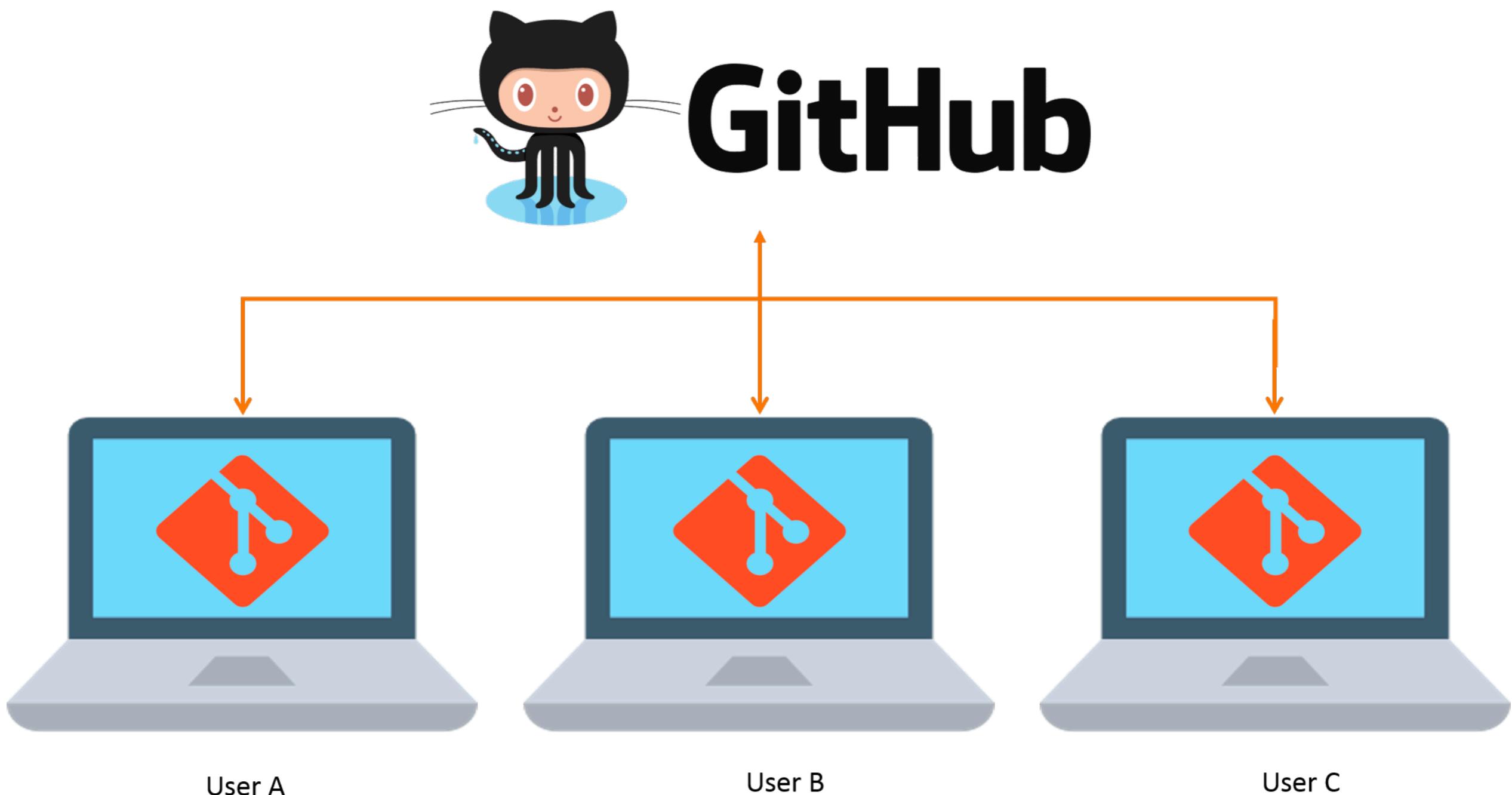


# Git for version control



**Similar to tracked changes and saving documents as final1.pdf and final2.pdf**

# Git and GitHub



# Git and GitHub

 git	 GitHub
1. It is a software	1. It is a service
2. It is installed locally on the system	2. It is hosted on Web
3. It is a command line tool	3. It provides a graphical interface
4. It is a tool to manage different versions of edits, made to files in a git repository	4. It is a space to upload a copy of the <b>Git</b> repository
5. It provides functionalities like Version Control System Source Code Management	5. It provides functionalities of Git like VCS, Source Code Management as well as adding few of its own features

# Using Git and Github

Repository / Repo / project

 **Andersen Lab**  
Northwestern University  
📍 Chicago 📩 erik.andersen@northwestern.edu

Repositories 165 Packages People 25 Teams 9 Projects 1 Settings

Find a repository... Type Language Sort Customize pins New

- NemaScan**  
R 1 ⚡ 0 ⭐ 0 ⓘ 3 ⏱ 1 Updated yesterday 
- strain-data** Private  
Strain data sheets and backup  
Python 0 ⚡ 0 ⭐ 0 ⓘ 4 ⏱ 0 Updated 3 days ago 
- C.elegans-growth-manuscript**  
HTML 0 ⚡ 0 ⭐ 0 ⓘ 0 ⏱ 0 Updated 3 days ago 
- mol\_eco\_manuscript** Private  
HTML MIT 0 ⚡ 0 ⭐ 0 ⓘ 0 ⏱ 0 Updated 4 days ago 
- abamectin** Private  
HTML 0 ⚡ 0 ⭐ 0 ⓘ 0 ⏱ 0 Updated 4 days ago 

Top languages

R HTML Python Nextflow  
Shell

Most used topics

Manage

nextflow celegans docker-image

People 25 >

Invite someone



# GitHub Repositories

AndersenLab / cegwas2-nf

Code Issues Pull requests Actions Projects Wiki Security Insights Settings

master 8 branches 0 tags Go to file Add file Code

**katiesevans edit docker image** 21388f4 on Jan 26 97 commits

- bin revert back to correlateR::cor() 2 months ago
- images update workflow image 2 years ago
- known\_mappings fix same input output issue 2 years ago
- test\_bulk provide option to submit traits as one bulk file 2 years ago
- test\_traits provide option to submit traits as one bulk file 2 years ago
- .DS\_Store add mac version of rvtests 2 years ago
- .gitignore minor updates to pipeline 2 years ago
- LICENSE Create license 2 years ago
- README.md update readme to reflect fix strain option 16 months ago
- main.nf add option to fix strain names 16 months ago
- nextflow.config edit docker image 2 months ago

about GWA mapping with C. elegans

nextflow

Readme MIT License

Releases No releases published Create a new release

Packages No packages published Publish your first package

Contributors 3

- Thatguy027 Stefan
- katiesevans Katie Evans
- faithman Ye Wang

Languages

R 62.2% Nextflow 37.8%

**Files**

**README.md**

**cegwas2-nf**

GWA mapping with C. elegans

**Overview of the workflow**

**C. elegans GWAS Nextflow Pipeline**

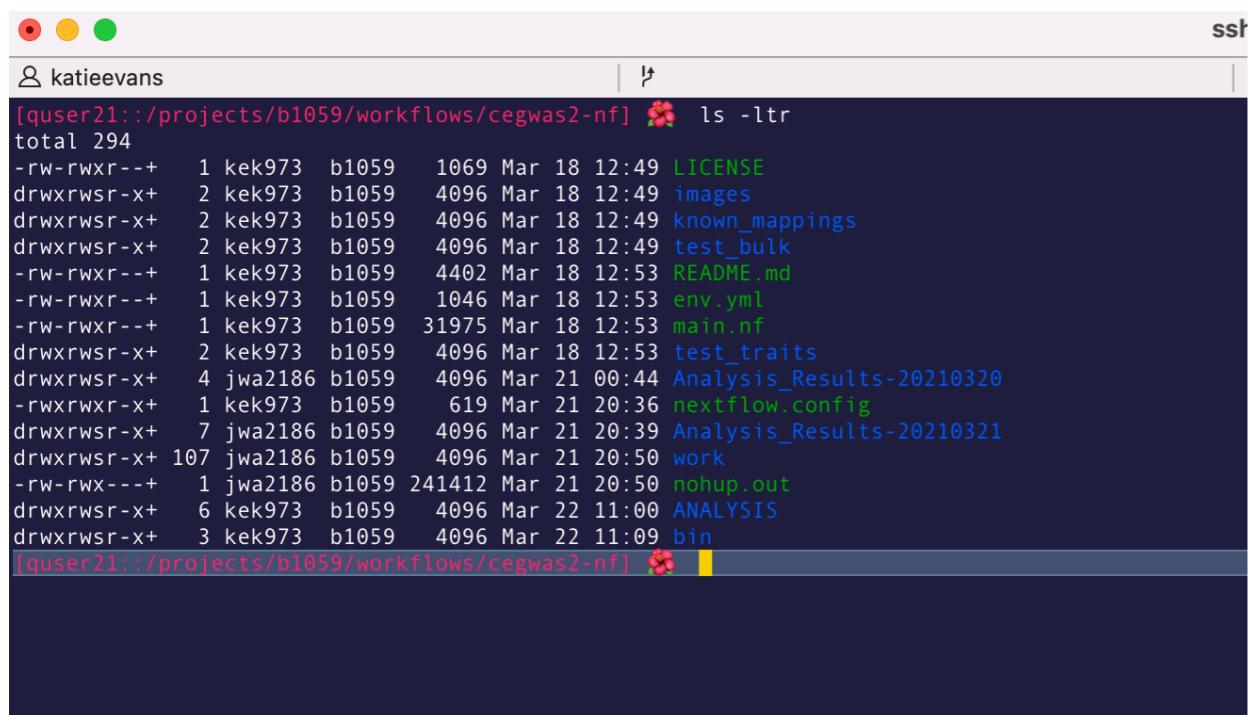
```
nextflow main.nf --traitdir=test_traits --vcf=bin/WI.20180527.impute.vcf.gz --p3d=TRUE --sthresh=BF
```

**Workflow**      **Results**

The diagram illustrates the workflow for a GWAS analysis using Nextflow. It starts with a GENOTYPE input, which is converted into a VCF file. This VCF file is then processed into a Genotype Matrix. From the matrix, Eigen Variants by Chromosome are identified. Finally, Genome-wide Independent Tests are performed. The results of these tests are stored in a directory named 'traitdir-date'.

# Using Git and Github

## Git on terminal

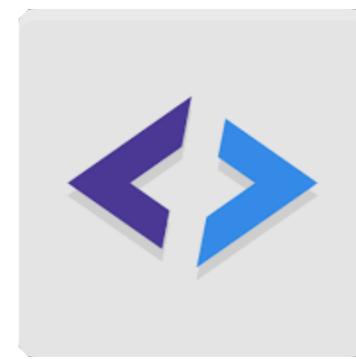


```
ss$ ls -ltr
total 294
-rw-rwxr--+ 1 kek973 b1059 1069 Mar 18 12:49 LICENSE
drwxrwsr-x+ 2 kek973 b1059 4096 Mar 18 12:49 images
drwxrwsr-x+ 2 kek973 b1059 4096 Mar 18 12:49 known_mappings
drwxrwsr-x+ 2 kek973 b1059 4096 Mar 18 12:49 test_bulk
-rw-rwxr--+ 1 kek973 b1059 4402 Mar 18 12:53 README.md
-rw-rwxr--+ 1 kek973 b1059 1046 Mar 18 12:53 env.yml
-rw-rwxr--+ 1 kek973 b1059 31975 Mar 18 12:53 main.nf
drwxrwsr-x+ 2 kek973 b1059 4096 Mar 18 12:53 test_traits
drwxrwsr-x+ 4 jwa2186 b1059 4096 Mar 21 00:44 Analysis_Results-20210320
-rwxrwxr-x+ 1 kek973 b1059 619 Mar 21 20:36 nextflow.config
drwxrwsr-x+ 7 jwa2186 b1059 4096 Mar 21 20:39 Analysis_Results-20210321
drwxrwsr-x+ 107 jwa2186 b1059 4096 Mar 21 20:50 work
-rw-rwx---+ 1 jwa2186 b1059 241412 Mar 21 20:50 nohup.out
drwxrwsr-x+ 6 kek973 b1059 4096 Mar 22 11:00 ANALYSIS
drwxrwsr-x+ 3 kek973 b1059 4096 Mar 22 11:09 bin

```

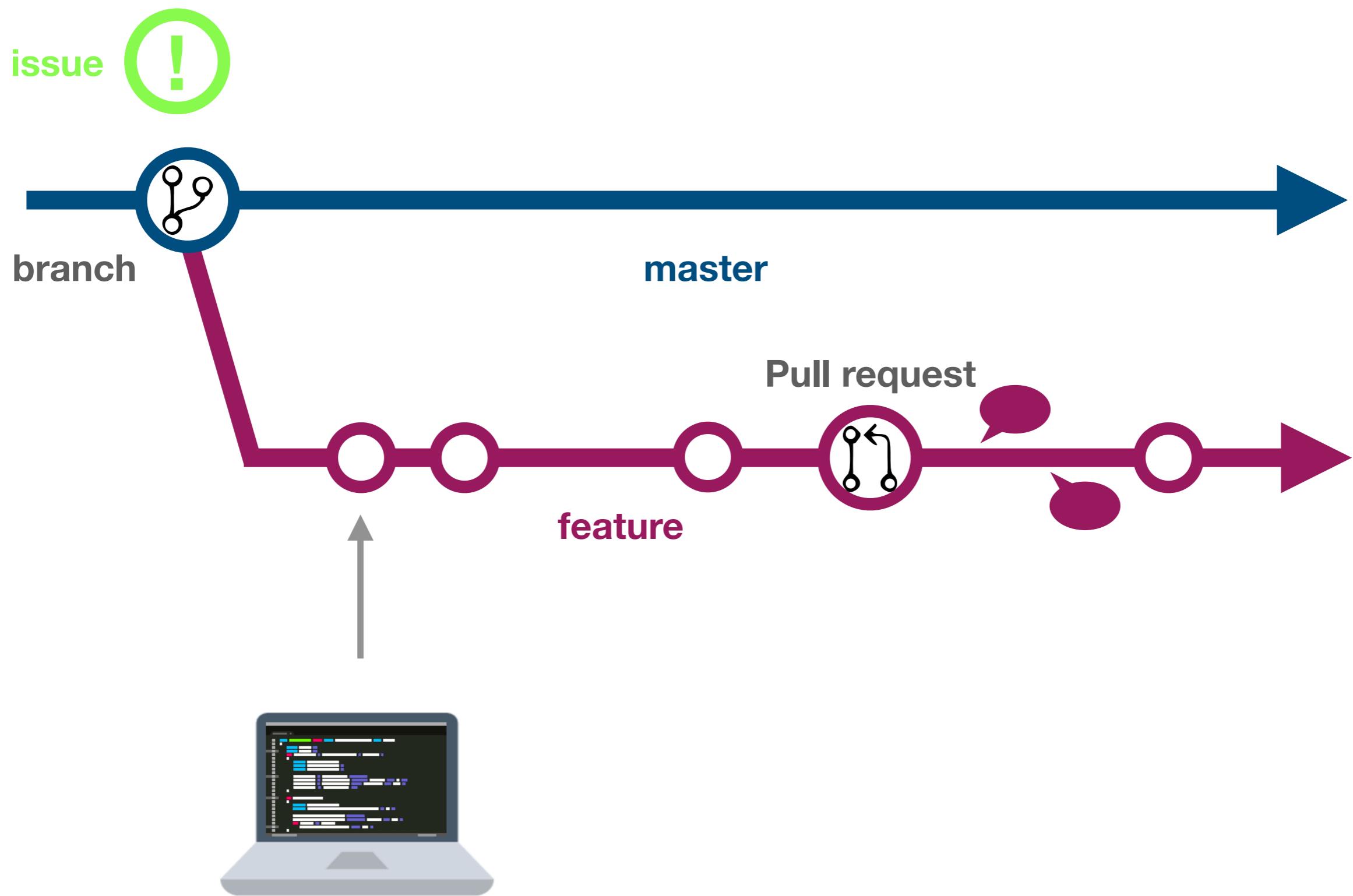
Git started [here](#)

## Git with GUI

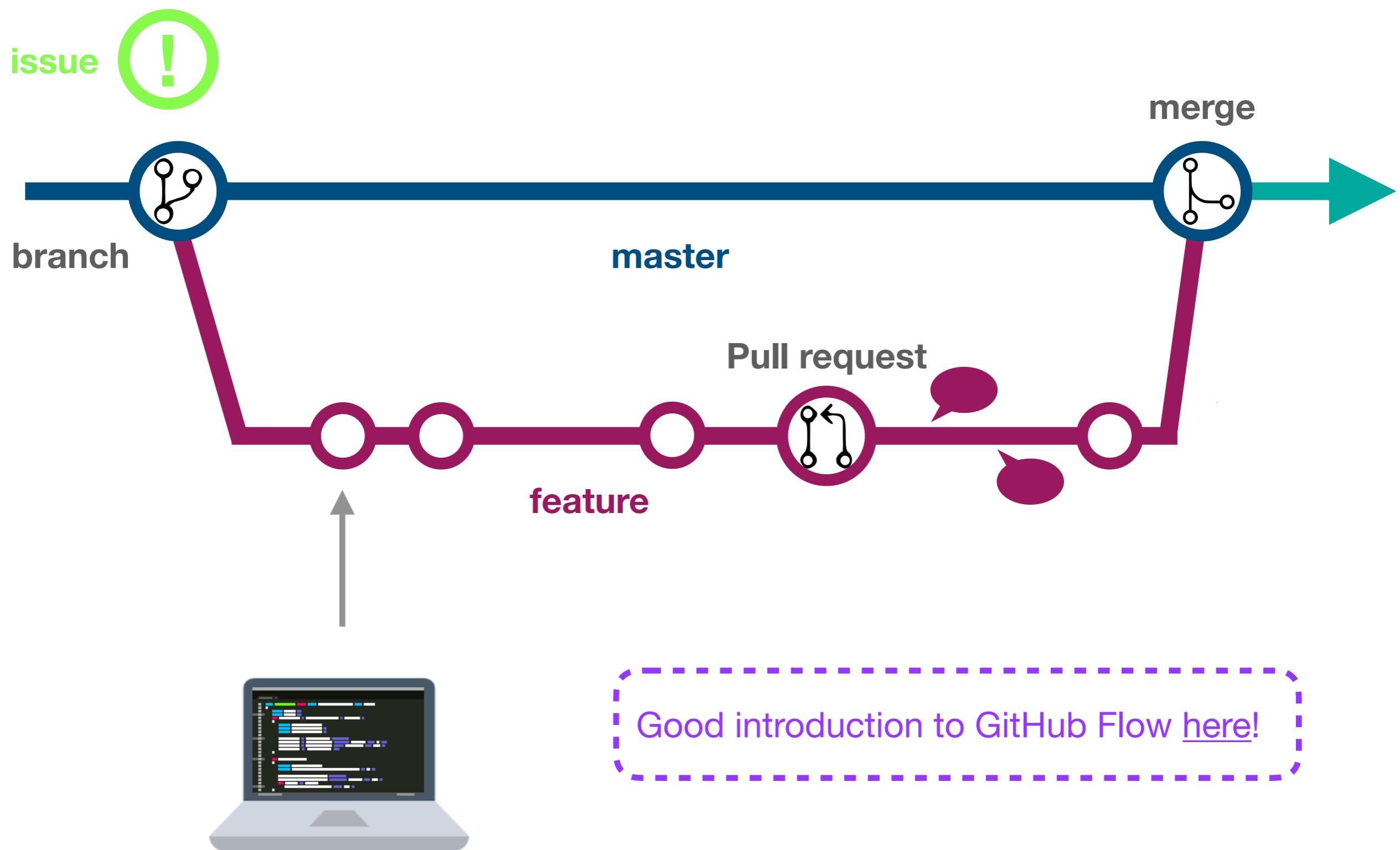


Git GUI [comparison](#)

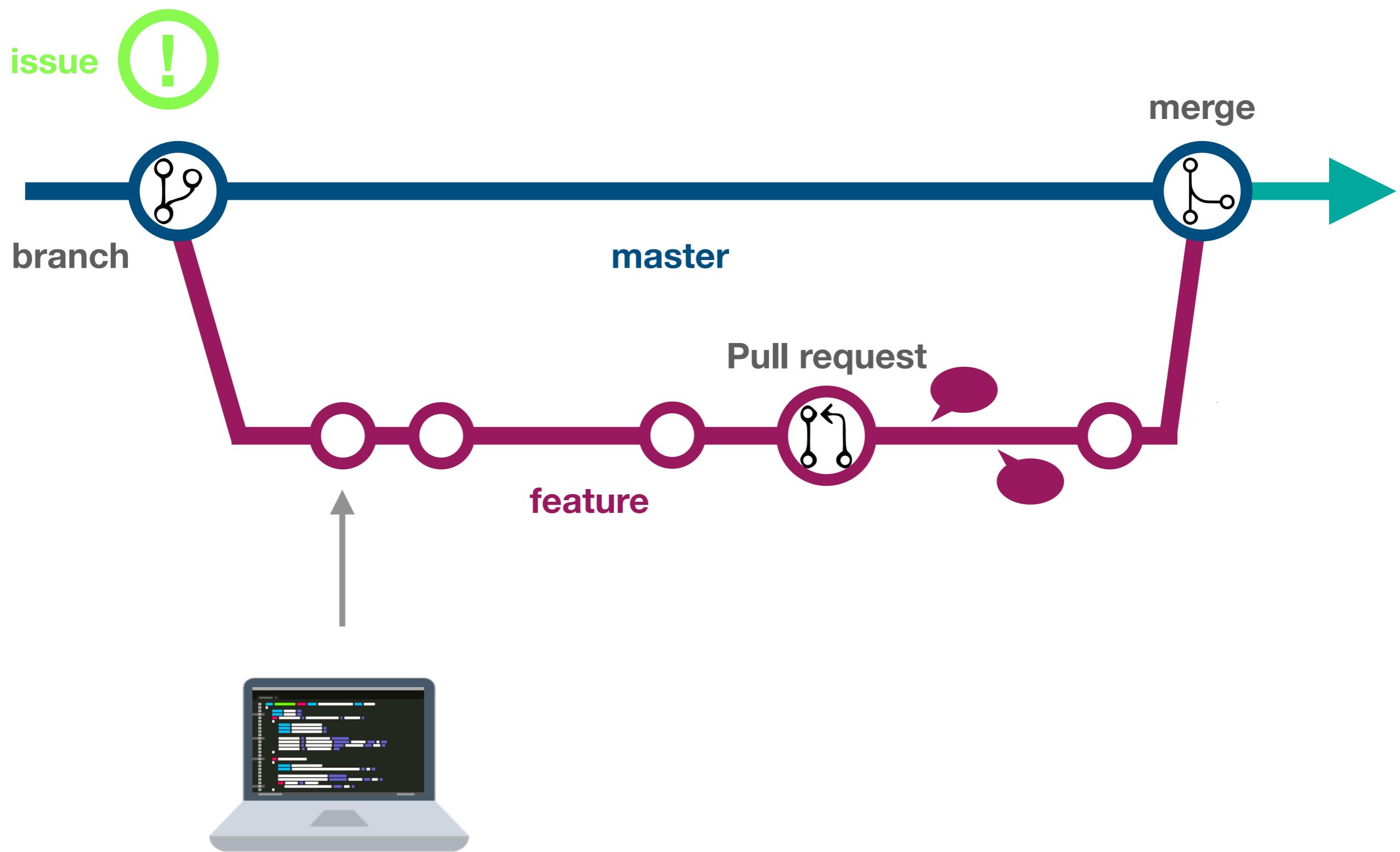
# The GitHub Flow



# The GitHub Flow



# The GitHub Flow



# Using Git and Github

 [AndersenLab / code\\_club](#)

 Watch ▾ 6     Star 0     Fork 0

 Code     Issues     Pull requests     Actions     Projects     Wiki     Security     Insights     Settings

 main ▾     1 branch     0 tags    Go to file    Add file ▾     Code ▾

 **katieevans** Update README.md    43017a8 10 seconds ago    3 commits

 introductions    Create test.txt    2 minutes ago

 README.md    Update README.md    10 seconds ago

**README.md** 

## code\_club

### 3.26.21 Instructions

Create a new file in the `introductions` directory named `your_name.txt` and write something fun (or boring) about yourself inside using the GitHub Flow (clone, branch, commit, push, pull request, merge).

**About** 

No description, website, or topics provided.

 Readme

---

**Releases**

No releases published

[Create a new release](#)

---

**Packages**

No packages published

[Publish your first package](#)

[https://github.com/AndersenLab/code\\_club](https://github.com/AndersenLab/code_club)

# Using Git and Github

1. Clone/pull

5. Push

2. Branch

6. Pull request

3. Edit

7. Inspect

4. Commit

8. Merge

# 1. Clone or Pull



```
cd < directory you want repo stored >
```

```
git clone https://github.com/AndersenLab/code_club.git
```

```
cd code_club
```

File > Clone Repository

Clone a Repository

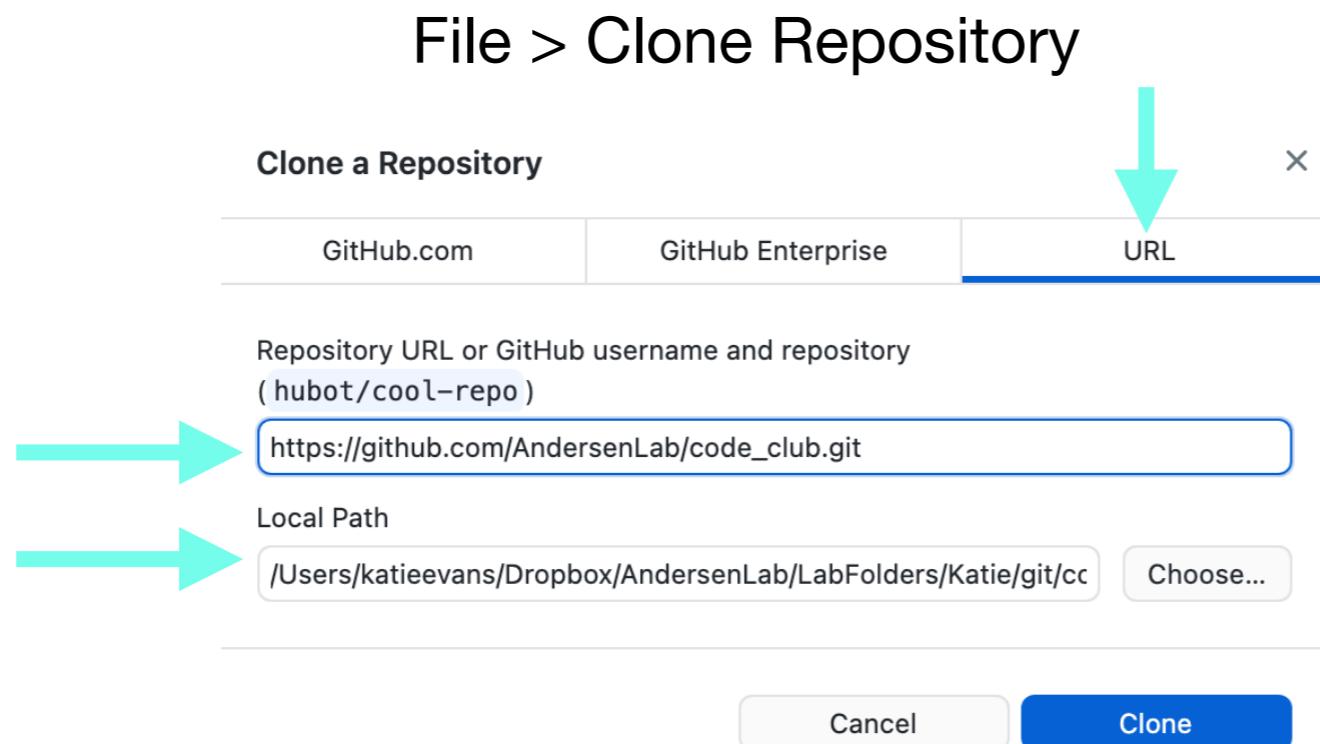
GitHub.com GitHub Enterprise URL

Repository URL or GitHub username and repository ( hubot/cool-repo )

https://github.com/AndersenLab/code\_club.git

Local Path /Users/katieevans/Dropbox/AndersenLab/LabFolders/Katie/git/cc Choose...

Cancel Clone

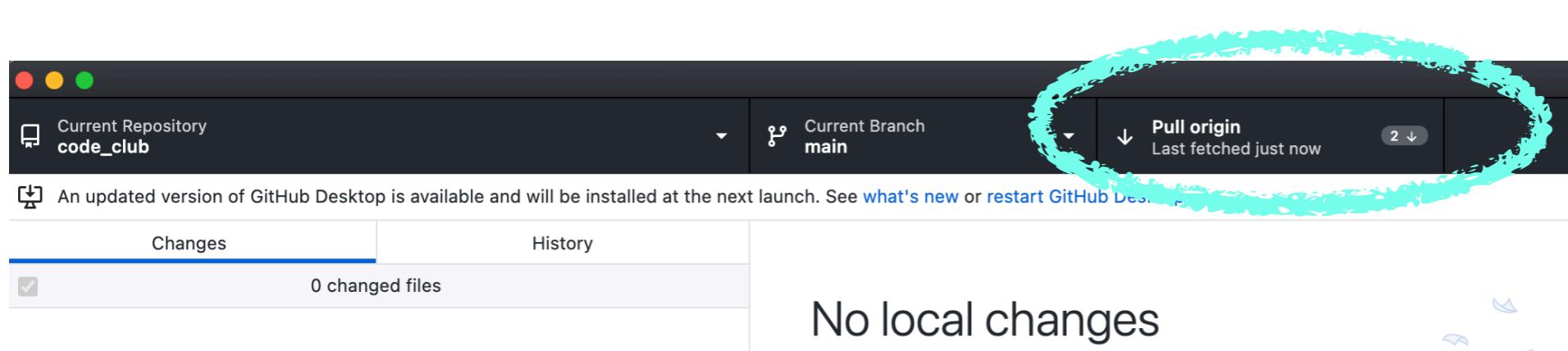


Open folder in finder

# 1. Clone or Pull



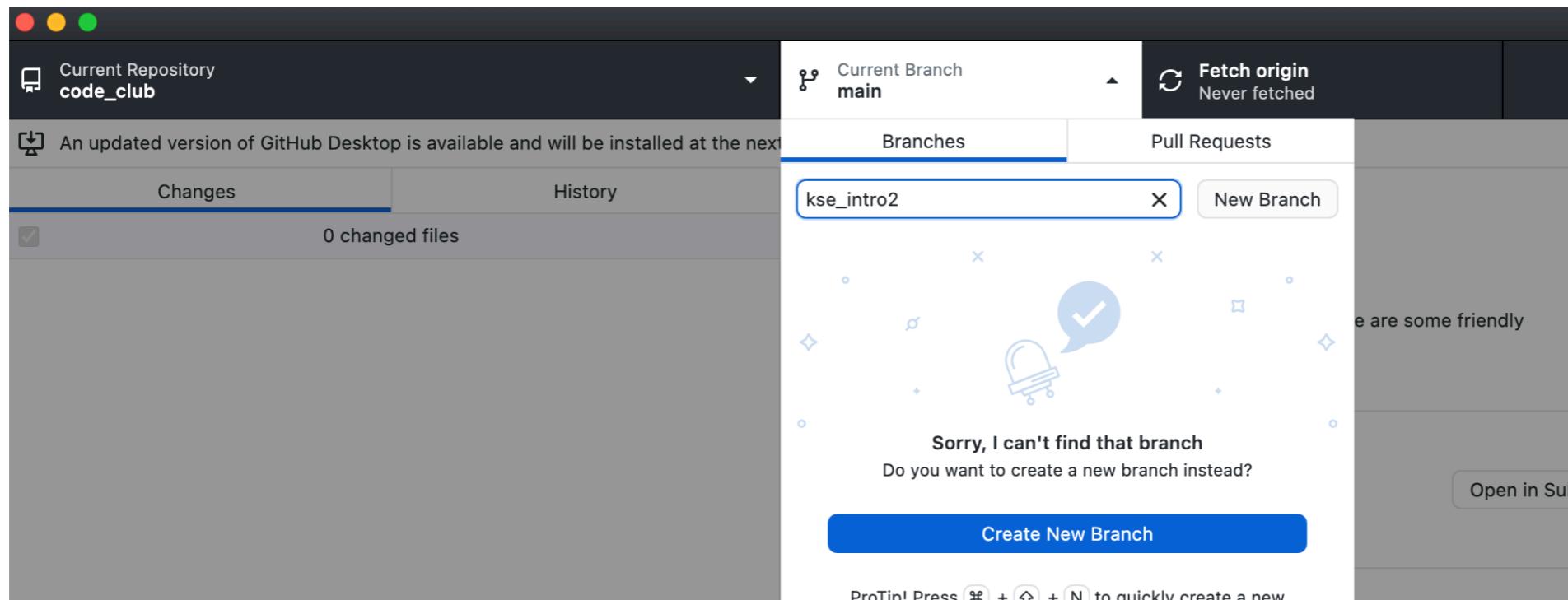
```
cd < directory of repo >  
git pull
```



# 2. Branch



```
git checkout -b <branch_name>
```



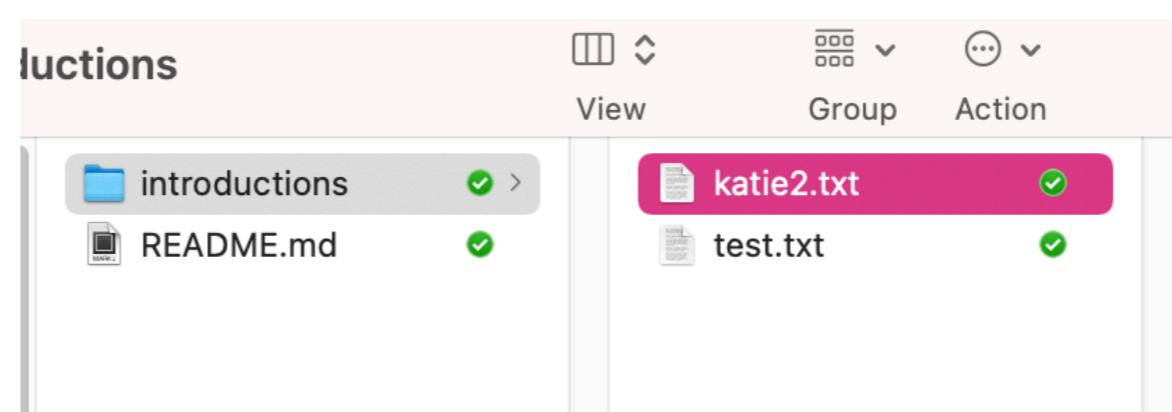
# 3. Edit



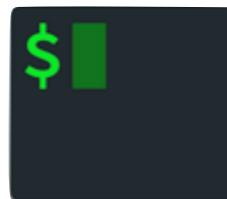
```
cd introductions
```

```
vi katie.txt
```

```
< edit katie.txt >
```

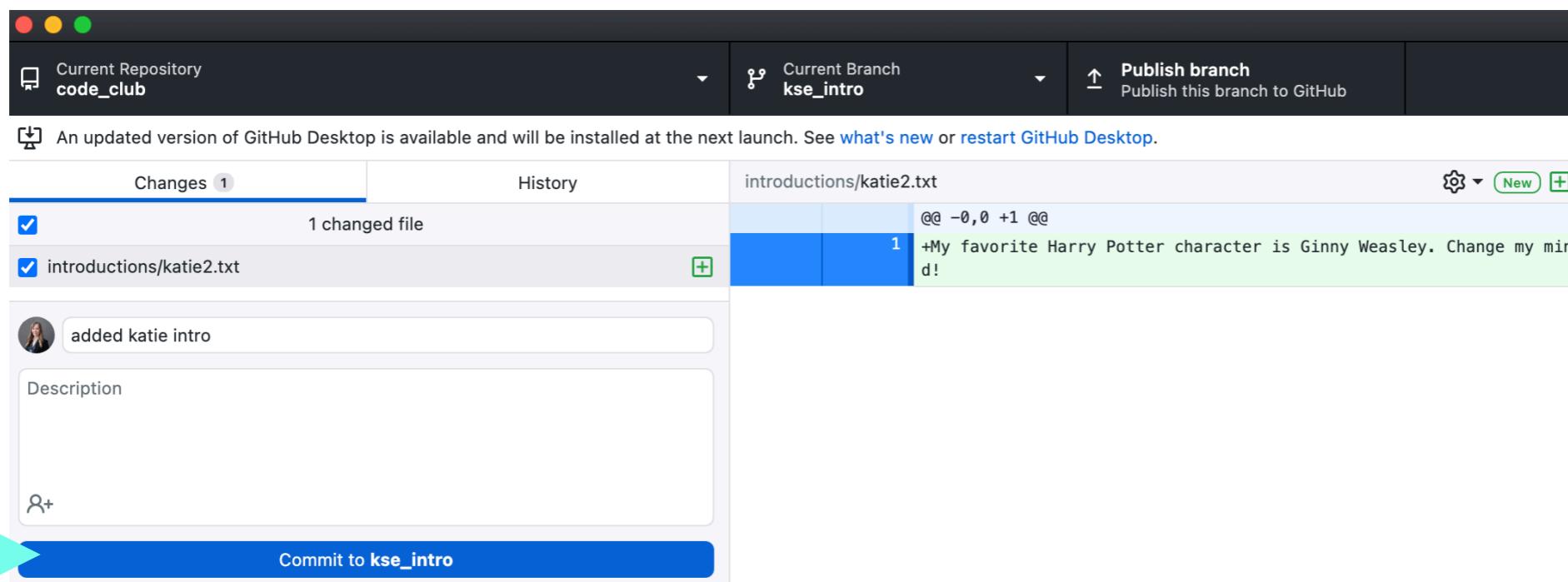


# 4. Commit



```
git add katie_intro.txt          (git add .)
```

```
git commit -m "added Katie intro"
```



A screenshot of the GitHub Desktop application interface. At the top, there are three dropdown menus: 'Current Repository' set to 'code\_club', 'Current Branch' set to 'kse\_intro', and 'Publish branch' with the sub-option 'Publish this branch to GitHub'. A message at the top left indicates an update is available. The main area shows a 'Changes' tab with one changed file, 'introductions/katie2.txt'. The file content is displayed in a diff view, showing a single line added: '+My favorite Harry Potter character is Ginny Weasley. Change my mind!'. Below the changes, a commit message 'added katie intro' is entered in the 'Description' field. A large blue button at the bottom right is labeled 'Commit to kse\_intro'. A teal arrow points to this button. On the far right, the GitHub logo is visible.



# 5. Push



git push

(git push --set-upstream origin kse\_intro)

An updated version of GitHub Desktop is available and will be installed at the next launch. See [what's new](#) or [restart GitHub Desktop](#).

Current Repository: code\_club

Current Branch: kse\_intro

Publish branch: Publish this branch to GitHub

Changes: 1 changed file

introductions/katie2.txt

@@ -0,0 +1 @@  
+My favorite Harry Potter character is Ginny Weasley. Change my mind!

added katie intro

Description

R+

Commit to kse\_intro



# 6. Pull Request

The screenshot shows a GitHub repository page for 'AndersenLab / code\_club'. The page has a light gray header with the repository name and a dark gray footer.

**Header:**

- Watch (6)
- Star (0)
- Fork (0)

**Navigation:**

- Code (selected)
- Issues
- Pull requests
- Actions
- Projects
- Wiki
- Security
- Insights
- Settings

**Branches and Tags:**

- main (selected)
- 2 branches
- 0 tags

**File Actions:**

- Go to file
- Add file
- Code (dropdown menu)

**Recent Activity:**

Author	File	Commit Hash	Time Ago	Commits
katieevaris	update README.md	43017a8	27 minutes ago	3 commits
	Create test.txt	Mar 22, 2021, 3:05 PM CDT		28 minutes ago
	Update README.md			27 minutes ago

**README.md Content:**

```
code_club
```

**3.26.21 Instructions**

Create a new file in the `introductions` directory named `your_name.txt` and write something fun (or boring) about yourself inside using the GitHub Flow (clone, branch, commit, push, pull request, merge).

**Sidebar:**

- About (description, website, or topics provided)
- Readme
- Releases (No releases published, Create a new release)
- Packages (No packages published, Publish your first package)

# 6. Pull Request

## Open a pull request

Create a new pull request by comparing changes across two branches. If you need to, you can also compare across forks.

# Choose someone (online now) to review!

# 7. Inspect

The screenshot shows a GitHub pull request page for the repository `AndersenLab/code_club`. The pull request, titled "added katie intro #1", has one commit from the branch `kse_intro` into the `main` branch. The commit message is "added katie intro". The pull request is marked as mergeable with no conflicts. The review section is empty, and the assignee is `katiesevans`. The sidebar on the right provides details about the pull request, including reviewers, assignees, labels, projects, milestones, linked issues, and notifications.

**Reviewers:** No reviews. Still in progress? Convert to draft.

**Assignees:** `katiesevans`.

**Labels:** None yet.

**Projects:** None yet.

**Milestone:** No milestone.

**Linked issues:** Successfully merging this pull request may close these issues.

**Notifications:** Customize. Unsubscribe. You're receiving notifications because you were assigned.

**1 participant:** `katiesevans`.

**Comment section:**

**If you got assigned to review someone's intro, respond in the comment section**

Wow! What an interesting take, I never thought about that! Do you prefer creamy or crunchy?

Attach files by dragging & dropping, selecting or pasting them.

Close with comment Comment

Remember, contributions to this repository should follow our [GitHub Community Guidelines](#).

ProTip! Add comments to specific lines under [Files changed](#).

# 8. Merge

Once someone responded to you, you can merge your own pull request

A screenshot of a GitHub pull request page. At the top, it shows the repository 'AndersenLab / code\_club' with 6 watches, 0 stars, and 0 forks. The 'Pull requests' tab is selected, showing 1 open pull request. The pull request details are as follows:

- Author:** katiesevans
- Destination Branch:** main
- Source Branch:** kse\_intro
- Comments:** 1 (from katiesevans)
- Commits:** 1 (from katiesevans)
- Checks:** 0
- Files changed:** 1 (from katiesevans)
- Status:** +1 -0 (green bar)

The comment from katiesevans says: "No description provided."

The commit message is: "added katie intro"

The self-assigned user is: katiesevans

The commit hash is: f29f398

Below the pull request details, there is a note: "Add more commits by pushing to the kse\_intro branch on AndersenLab/code\_club." A green button labeled "Merge pull request" is highlighted with a black arrow pointing to it.

On the right side, there are sections for Reviewers, Assignees, Labels, Projects, Milestone, and Linked issues. The "Reviewers" section shows "No reviews" and "Still in progress? Convert to draft". The "Assignees" section shows "katiesevans". The "Labels" section shows "None yet". The "Projects" section shows "None yet". The "Milestone" section shows "No milestone". The "Linked issues" section shows "Successfully merging this pull request may close".



Pull request successfully merged and closed

You're all set—the kse\_intro branch can be safely deleted.

Delete branch



# Using Git and Github

1. Clone/pull

5. Push

2. Branch

6. Pull request

3. Edit

7. Inspect

4. Commit

8. Merge

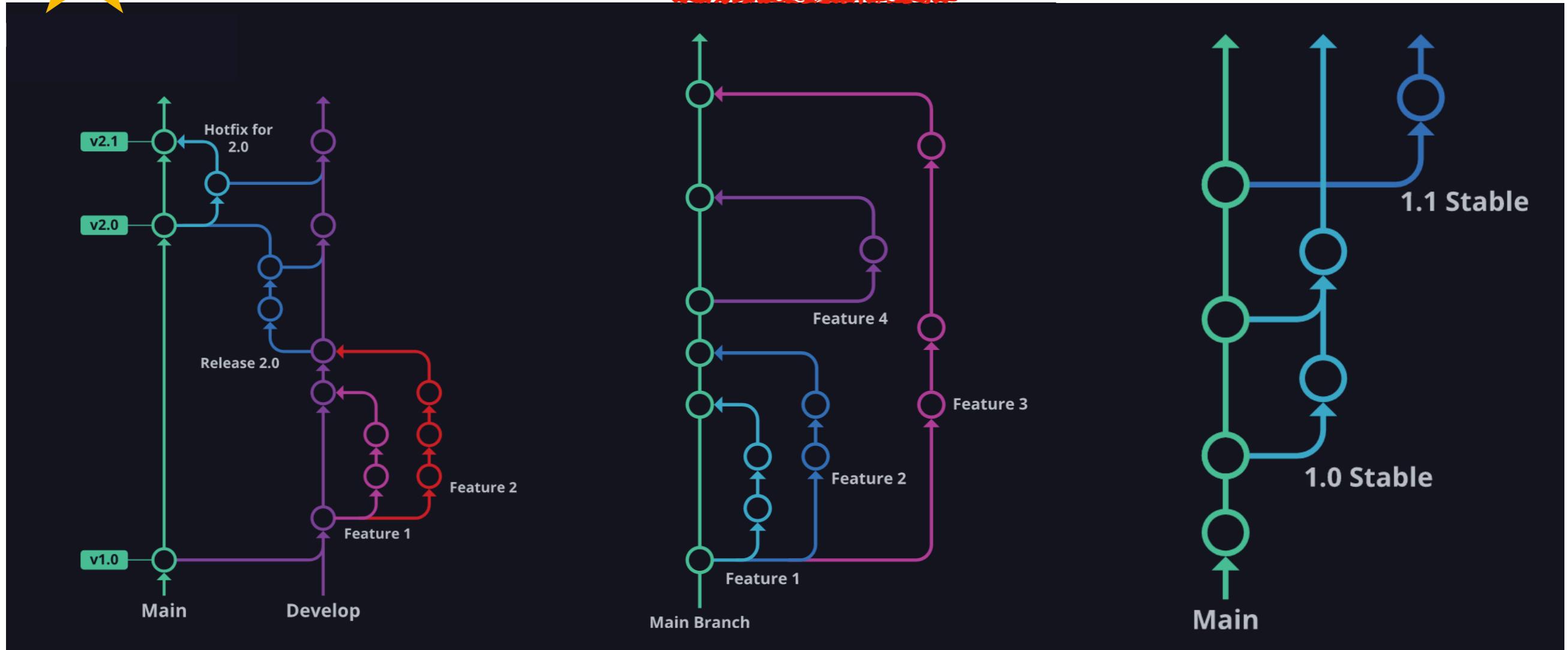
# GitHub Flow Best Practices

- Any code in the main branch should be deployable
- Create new descriptively-named branches off the main branch for new work such as **feature/add-new-plot**
- Commit new work to your local branches and regularly push work to the remote
- To request feedback or help, or when you think your work is ready to merge into the main branch, open a **pull request**
- After your work or feature has been reviewed and approved, it can be merged into the main branch
- Delete stale branches!
- Once your work has been merged into the main branch, it should be deployed immediately

# Git branches

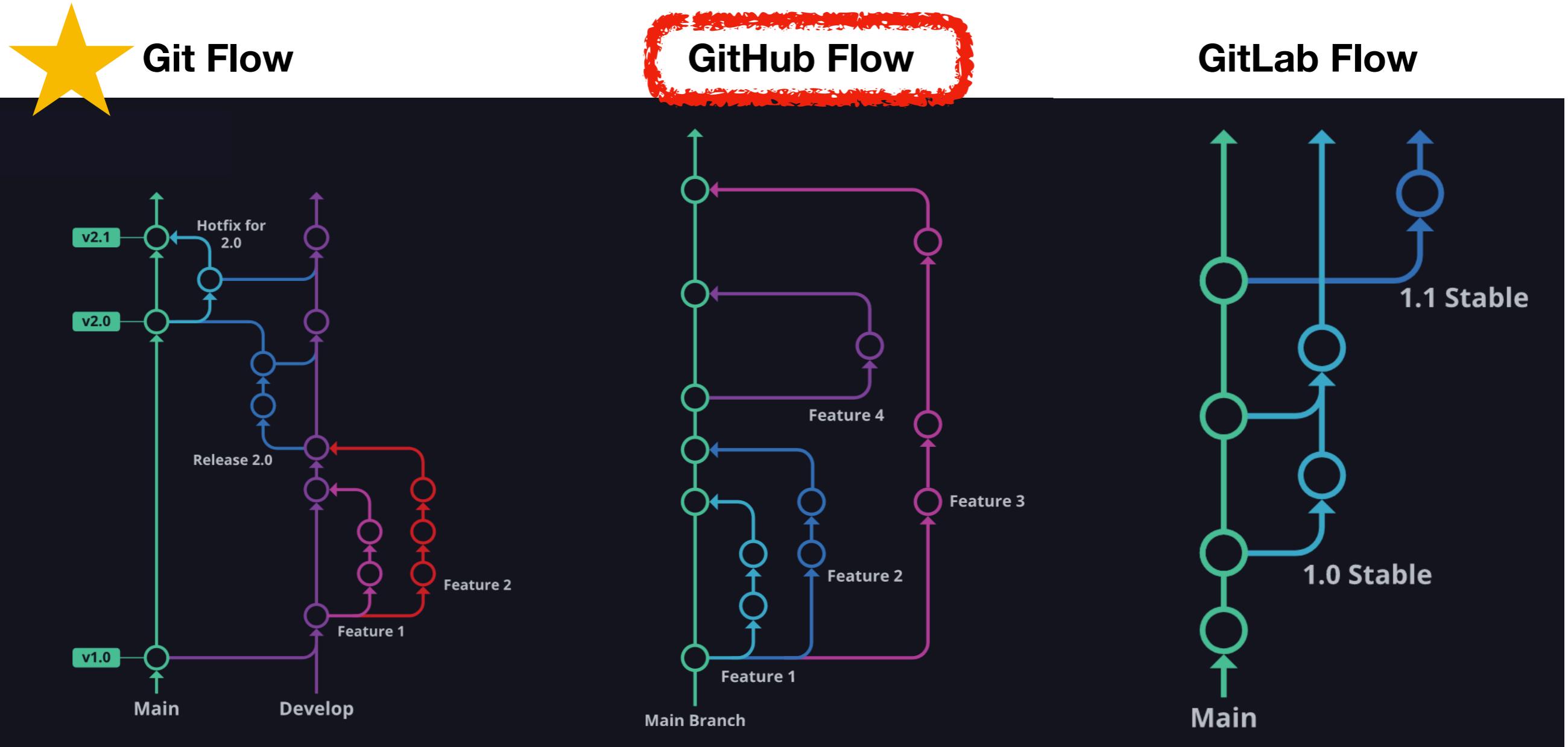


Git Flow



What is the best branch strategy? ([article](#))

# Git branches



Organized

Allows version releases

Complex

Long development cycle

Simple

Continuous delivery

No multiple versions

Susceptible to bugs

Medium simplicity

Medium organization

Continuous delivery

Allows multi-versions

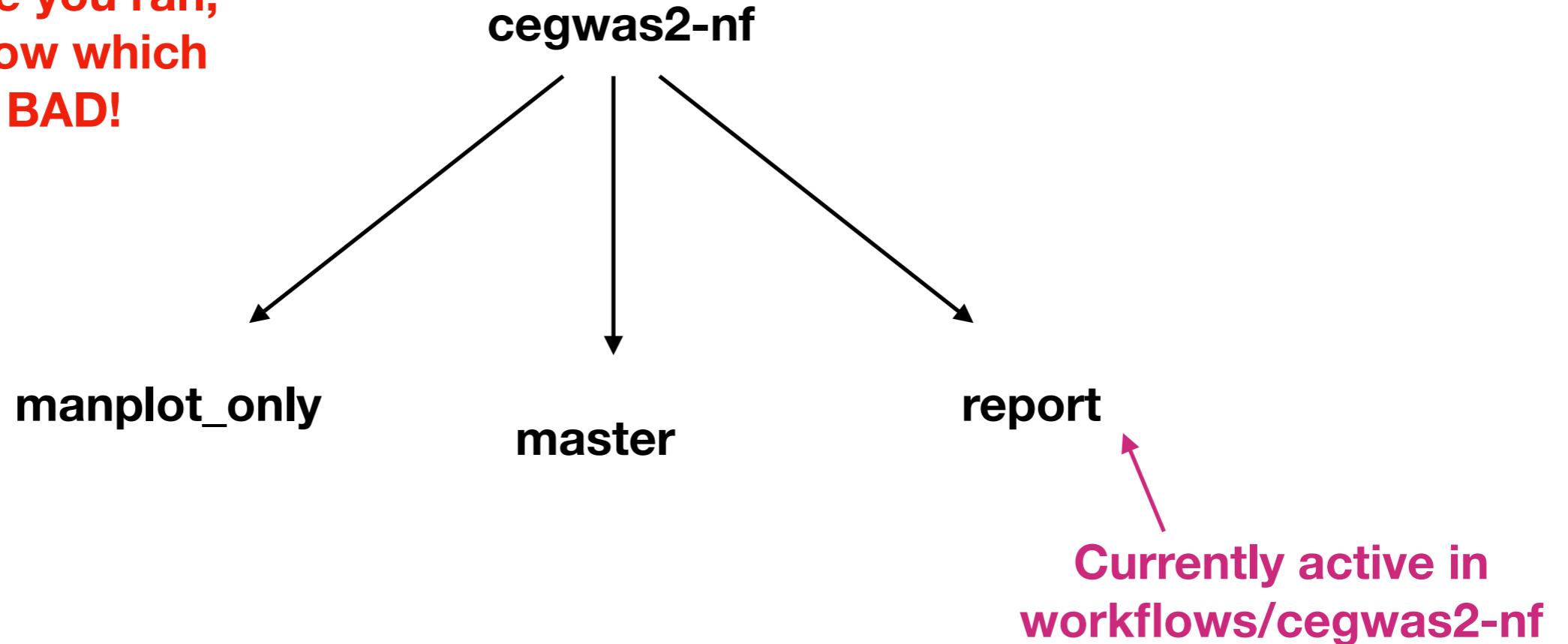
# Git branches

The screenshot shows a GitHub repository page for `AndersenLab / cegwas2-nf`. The `Code` tab is selected. A sidebar on the left lists branches and tags, with `master` selected. The main area displays a list of recent commits:

Commit Message	Date
revert back to correlateR::cor()	2 months ago
update workflow image	2 years ago
fix same input output issue	2 years ago
provide option to submit traits as one bulk file	2 years ago
provide option to submit traits as one bulk file	2 years ago
add mac version of rvtests	2 years ago
minor updates to pipeline	2 years ago
Create license	2 years ago
update readme to reflect fix strain option	16 months ago
add option to fix strain names	16 months ago
edit docker image	2 months ago

# Git branches

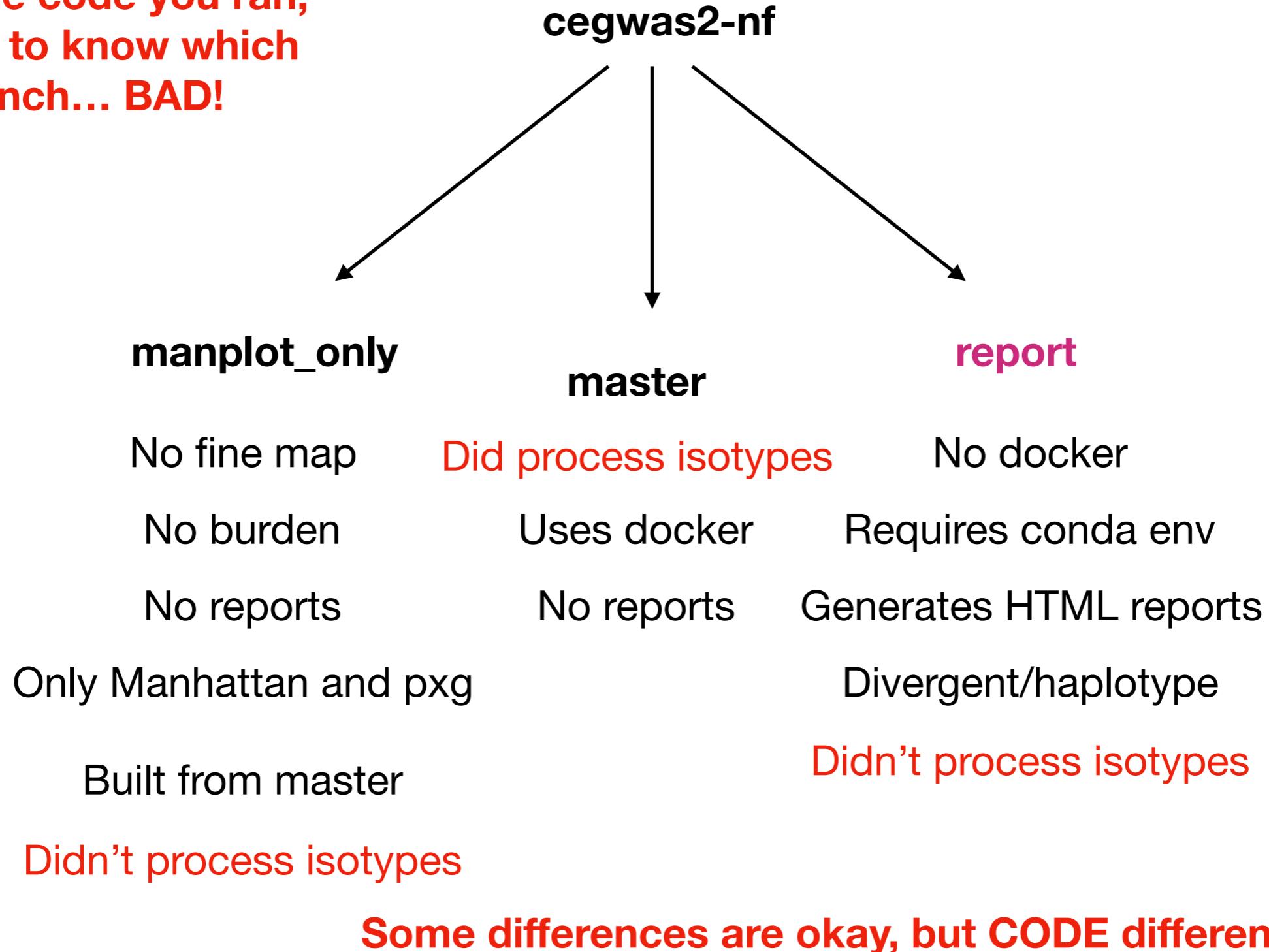
From the code you ran,  
no way to know which  
branch... BAD!



(but what if someone were  
to switch branches in this  
public folder? Do YOU  
check which branch  
before running?)

# Git branches

From the code you ran,  
no way to know which  
branch... BAD!



# Using GitHub for code review

1. Create a round-robin system so that each person reviews one code and gets one code reviewed
2. Create a new branch of the code\_club GitHub with a descriptive name (i.e. KSE\_plot\_genes)
3. Choose a script/function/piece of code you would like reviewed and add to the new branch of code\_club GitHub in a folder with your name
4. Open a pull request and select the reviewer designated by the round-robin system
5. The reviewer will go over the code, make comments and suggestions. The reviewer will have two weeks to complete the code review.
6. When the review is complete, you can make any changes you want and either complete the merge or close without merging
7. After completion, please delete the branch so we don't fill up with 100s of branches. You can always look back at closed pull requests!